ZANZIBAR PROTECTORATE.

Report on the Medical Division, for the year 1920.

There is little progress to report in the year under review owing to shortage of staff, limitation of building programme, and the difficulties and delays in the execution of orders for supplies from Europe.

General.—The general health of the population has been good throughout the year, except for a limited epidemic of influenza in October and November.

Native Hospital.—Out-patients treated numbered 9,638 and in-patients 996 as compared to 8,232 and 816 respectively during the previous year.

The following operations were performed during the year :—

Number of operations	250
Major operations	109
Minor operations	141
General anæsthesia	214
Local anæsthesia	9
Ethyl chloride	6
Without anæsthesia	3

Operations performed included the following :—

Laparotomy	6
Ovariotomy	3
Hysterectomy	5
Intestinal obstruction	1
Appendicectomy	1
Amputations	3
Herniotomy	57
Elephantiasis	8
Enucleation of eye	1

Several patients were treated with intravenous injections of 914 for syphilis and intravenous injections of Tartarated Antimony for bilharziasis. The results have been very gratifying.

The following is the number of admissions for abnormal labour :—

Ectopic pregnancy	1
Transverse position	3
Partus cadaveris	1
Induction for eclampsia	1

European Hospital.—The number of in-patients was 85, including four confinements.

Kilimani Central Prison.—Dr. Curwen, Principal Medical Officer, was in charge of this institution until the arrival of Dr. de Sousa in April, and the latter was relieved by Dr. Craig on his arrival in November.

The Prison Staff consists of a European Chief Prison Officer, Indian Clerk, Indian Jamadar and 31 Native Warders, two Sergeants, Cook and Wardress. Their health was good throughout the year.

All prisoners were weighed and medically examined on admission. At this initial examination it was found that they suffered mostly from gonorrhœa, ankylostomiasis, chronic ulcers, hernia and general debility. With treatment and regular life and work they improved in health, and generally left the Prison having gained in weight. Considering that prisoners come from the most degenerate class of the population, the death incidence compares favourably with that of the general population.

During the year the daily average in Gaol was 222, and the total committed to this Prison throughout the year was 1,347. The number of admissions to Hospital was 258 and the daily average of sick was 11.1. The number of deaths was 18, mostly from pneumonia (in August and September) and dysentery (December and January). Dysentery was less prevalent than in previous years and the fly pest decreased. Chicken-pox was prevalent throughout the year. The treatment for ankylostomiasis which has given the best results has been the exhibition of 25 grains each of Beta-naphthol and Thymol, made up as a draught with mucilage and water, of which a second dose is given after an interval of two hours. The treatment is preceded by Calomel and Sodii Bicarbonate and Saline purge on the previous day, and starvation is maintained until two hours after the second dose of the draught. This treatment is repeated once weekly, and usually two or three treatments suffice for a cure.

Lunatic Asylum.—This Asylum is provided for the confinement of criminal lunatics. The admissions were 15 males and five females. No restraint has been used and the inmates pass most of their time in the open yard and in the evening are allowed into the grounds outside the walls, accompanied by the warders. On recovery of their mental faculties, or if friends or relatives are willing to take charge of them, they are recommended for release.

Out-Station Dispensaries.—At Mkokotoni in the north of the island and about 22 miles from the town of Zanzibar, with a permanently stationed dispenser. In-patients 39 and out-patients 1,305.

At Chuaka on the east coast of the island, about 20 miles from town, which is visited twice a week by a dispenser. Out-patients, 533.

At Mwera, about six miles from town, which is visited twice a week by a dispenser. Out-patients, 1,428.

At Koani, at the Government plantation, with a permanent native compounder under the control of the Director of Agriculture. Out-patients, 1,363.

In the near future it is proposed to open Dispensaries at Selem Government Plantation and at Mkanduchi, a flourishing village in the south of the island.

K. A. R. Lines.— The average number on the strength was 128; with some 35 women and children. There is a Sub-Assistant Surgeon stationed at the Lines with an infirmary, to which cases are admitted. More serious cases, which require careful nursing, are sent to the Government Native Hospital. To the K. A. R. Infirmary 143 were admitted, out of which 33 were transferred to the Native Hospital.

Staff.—Dr. Curwen, Principal Medical Officer, who in addition carried on the routine duties of the Medical Officer of Health until the arrival of Dr. Spearman in September.

Dr. de Sousa, who returned from leave in April and was placed in charge of the Prisons, Lunatic Asylum and K. A. R. Lines.

Dr. Waller, in charge of the Native and Subordinates' Hospital.

Dr. Howard, in charge of Pemba Island, with additional duties of the Medical Officer of Health stationed at Chake Chake.

Dr. Craig and Dr Phippen, who are under temporary agreement, arrived on first appointment, 25th November and 30th December respectively.

Mrs. Zurcher, Matron of the Nursing Staff, was on duty in Zanzibar from 1st February to the end of the year.

Miss Brewerton, Nursing Sister, was Sister in Charge of European Hospital until the end of April, when she went on leave prior to retirement.

Miss Chambers, Nursing Sister, was stationed at Natives' and Subordinates' Hospital. In February she proceeded on leave to Europe, returning in September and assuming the duty of Sister in Charge of European Hospital.

Miss Marson, Nursing Sister, was stationed at Natives' and Subordinates' Hospital. During the absence of Miss Brewerton on leave she acted as Sister in Charge of the European Hospital.

Miss Gittins, Nursing Sister, was stationed at Natives' and Subordinates' Hospital until 10th April, when she proceeded on privilege leave.

Mrs. Howard, Nursing Sister, was stationed at Chake Chake Native Hospital, Pemba, throughout the year.

Miss Bailey, newly-appointed Nursing Sister, was stationed at Zanzibar with duties at European and Native Hospitals.

Sub-Assistant Surgeon Joshi was stationed at Weti, Pemba, throughout the year.

Sub-Assistant Surgeon Niamat Ullah was stationed at Ziwani Lines with additional charge of Prison Infirmary and Lunatic Asylum.

Sub-Assistant Surgeon Ramrao Shamrao returned from Mafia and was stationed at K. A. R. Lines with duties at Prison Infirmary and Lunatic Asylum.

The work of Dispensers at the Government Hospital and Out-District Dispensaries has been satisfactory.

Mr. Martin, the Head Clerk and Storekeeper, was stationed at the Head Office throughout the year.

H. CURWEN,
Principal Medical Officer.

Zanzibar, 23rd November, 1921.

Table I.

Returns of Diseases and Deaths for the Year 1920 for the Protectorate Hospitals and Dispensaries.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
INFECTIVE DISEASES.					
Beri-Beri	..	..	1	..	..
Chicken-pox	..	..	80	..	79
Dengue	1	..	1	..	1
Diphth ria	..	..	..	..	..
Dysentery	..	..	79	6	48
Erysipelas	..	..	2	..	..
Gonorrhoea	1	..	47	..	889
Influenza	14	..	144	1	355
Leprosy—(*a*) Nodular	..	..	..	..	1
(*b*) Anæsthetic	..	..	..	..	3
Malaria (*a*) Sub-Tertian	24	..	101	..	1170
(*b*) Chronic Malaria	1	..	18	..	250
(*c*) Black-water Fever	..	..	6	..	2
Measles	..	..	8	..	17
Pneumonia	..	..	44	17	26
Rheumatism, Acute	2	..	12	..	46
Septicaemia	..	..	2	2	..
Small-Pox	..	..	20	..	6
Syphilis—(*a*) Primary	2	..	28	..	76
(*b*) Secondary	..	..	12	..	166
(*c*) Tertiary	..	..	11	..	23
(*d*) Inherited	..	..	1	..	7
Tetanus	..	..	3	1	1
Tuberculosis	..	..	33	9	48
Whooping Cough	..	..	1	..	44
Yaws	..	..	24	..	216
Mumps	..	..	4	..	11
Undefined Fever	2	..	65	..	1390
Other Diseases	..	..	..	..	9
INTOXICATIONS.					
Alcoholism	..	..	2	..	5
Delayed Cloroform Poisoning	..	..	1	1	..
GENERAL DISEASES.					
Anæmia	..	..	6	..	740
Diabetes	..	..	1	..	119
Debility	1	..	18	7	178
Rheumatism—Chronic	..	..	19	..	1516
Other Diseases	..	..	2	..	3
LOCAL DISEASES.					
Diseases of the Nervous System. Sub-Section 1.					
Neuritis	1	..	1	..	22
Meningitis	..	..	1	1	..
Myelitis	..	..	..	..	1
Other Diseases	..	..	6	2	1
Sub-Section 2.					
Apoplexy	..	..	2	1	..
Paralysis	..	..	7	3	22
Epilepsy	..	..	2	..	3
Neuralgia	..	..	2	..	194
Neurasthenia	2	..	..	..	1
Carried forward ..	51	..	817	51	7689

Table I—*continued.*

Return of Diseases and Deaths for the Year 1919 for the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	51	..	817	51	7689
LOCAL DISEASES—*(contd.)*					
Hemiplegia	..	..	2	..	..
Hysteria	..	..	..	..	4
Vertigo	..	..	3	..	17
Other Diseases	1	..	1	..	..
Sub-Section 3. *Mental Diseases*					
Mania	..	..	..	..	8
Dementia	..	..	3	1	..
Delusional Insanity	..	..	2	1	2
Other Diseases	..	..	1	..	2
Diseases of the Eye					
Blepharitis	..	..	..	..	3
Conjunctivitis	..	..	9	..	325
Keratitis	..	..	2	..	3
Ulceration of Cornea	..	..	2	..	52
Iritis	1	..	1	..	25
Optic Neuritis	..	..	..	..	6
Cataract	..	..	15	..	47
Entropion Trichiasis	..	..	3	..	..
Leucoma	..	..	1	..	..
Other Diseases	..	..	5	..	28
Diseases of the Ear					
Inflammation	..	..	1	..	143
Other Diseases	..	..	2	..	75
Diseases of the Nose					
Coryza	..	..	..	..	83
Other Diseases	..	..	..	..	6
Diseases of the Circulatory System					
Pericarditis	..	..	3	2	..
Endocarditis	..	..	2	..	..
Valvular, Mitral	..	..	4	2	13
Aneurism	..	..	1	1	..
Other Diseases	..	..	6	..	1
Diseases of the Respiratory System					
Laryngitis	..	..	..	..	2
Bronchitis	1	..	46	..	2763
Broncho-pneumonia	..	..	13	..	7
Gangrene of Lung	..	..	2	1	3
Empyema	..	..	..	..	1
Pleurisy	..	..	12	..	9
Asthma	..	..	7	..	157
Other Diseases	..	..	1	..	1
Diseases of the Digestive System					
Stomatitis	..	..	1	..	38
Caries of teeth	..	..	..	..	1055
Pharynigitis	1	..	..	..	68
Tonsilitis	2	..	7	..	79
Gastritis	..	..	4	..	18
Hæmatemesis	1	..	1	1	..
Carried forward ..	58	..	1010	60	12733

Table I—*continued.*

Return of Diseases and Deaths for the Year 1920 for the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	58	..	1010	69	12733
Local Diseases—*(contd.)*					
Diseases of the Digestive System					
Ulceration of Stomach	..	..	..	..	1
Stricture of Stomach	..	..	..	..	1
Dyspepsia	..	..	3	..	445
Enteritis	..	..	1	..	2
Appendiciti	1	..	..	..	..
Colitis	..	..	2	..	12
Ulceration ofsIntestines	..	..	1	1	..
Hernia	..	..	127	..	110
Diarrhœa	..	..	22	3	245
Constipation	..	..	4	..	2605
Colic	..	..	11	..	361
Hæmorrhoids	..	..	10	..	49
Hepatitis, acute	..	..	1	..	1
Hepatic Congestion	11	..	6	..	261
Abscess, Hepatic	..	..	1	1	..
Cirrhosis, Hepatic	..	..	6	..	15
Jaundice	1	..	3	..	18
Peritonitis	..	..	2	1	..
Ascites	..	..	2	..	9
Other Diseases	..	..	8	2	18
Diseases of the Lymphatic System					
Splenitis	1	..	4	..	125
Inflammation of Lymphatic Gland ..	..	..	10	..	41
Suppuration of do. ..	..	..	..	..	1
Lymphangitis	..	..	7	..	38
do. Filarial ..	..	..	3	..	15
Diseases of the Urinary System					
Nephritis Acute	..	..	6	3	3
,, Chronic	1	..	7	2	3
Cystitis	..	..	3	..	36
Hæmaturia	..	..	1	..	10
Haematuria, Bilharzial	..	..	6	..	102
Retention of Urine	..	..	1	..	3
Other Diseases	..	..	1	..	5
Diseases of the Generative System					
Male Organs—					
Urethritis, Acute	..	..	..	..	9
do Chronic	..	..	1	..	10
Stricture	..	..	5	1	65
Soft Chanere	..	..	8	..	96
Hydrocele	..	..	58	1	185
Varicocele	..	..	..	..	19
Orchitis	..	..	17	..	129
Epididymitis	2	..	1	..	1
Abscess of Testicle	..	..	5	1	7
Haematocele	..	..	8	..	..
Other Diseases	..	..	23	1	24
Carried forward ..	75	..	1395	77	17813

TABLE I—*continued.*

Return of Diseases and Deaths for the Year 1920 in the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	75	..	1395	77	17813
LOCAL DISEASES—*(contd.)*					
Female Organs—					
Ovaritis	..	..	..	..	1
Ovarian Cyst	..	..	7	..	4
Displacement ofUterus	..	..	1	...	1
Vaginitis	..	..	1	1	1
Amenorrhœa	..	..	..	..	2
Dysmenorrhœa	..	..	..	..	6
Menorrhagia	..	..	1	..	17
Fibroid Uterine	..	..	7	..	15
Leucorrhoea	..	..	..	..	5
Abortion	..	..	..	..	1
Retained Placenta	..	..	..	..	2
Mastitis	...	..	..	..	3
Abscess, Breast	..	..	..	..	3
[Confinements]	5	..	12	..	..
Eclampsia	..	..	1	1	..
Other Diseases	..	..	12	1	4
Diseases of the Organs of Locomotion					
Osteitis	..	..	2	..	2
Arthritis	..	..	5	1	13
Synovitis	..	..	4	1	43
Bursitis	..	..	..	..	18
Myalgia	..	..	2	..	51
Fibroid Bursae	..	..	2	..	..
Necrosis	..	..	1	..	..
Other Diseases	..	..	1	..	4
Diseases of Connective Tissue					
Cellulitis	..	..	10	3	33
Abscess	3	..	57	..	248
Elephantiasis	..	..	25	..	36
Other Diseases	..	..	..	..	3
Diseases of the Skin					
Urticaria	..	..	..	..	18
Eczema	..	..	3	..	127
Boils	1	..	7	..	243
Carbuncle	1	..	..	..	..
Herpes	..	..	..	...	7
Psoriasis	..	..	..	..	7
Tinea	..	..	3	..	171
Tinea Cruris	...	...	..	..	21
Scabies	...	..	3	..	662
Acne	..	...	..	..	1
Prickly Heat	...	..	..	..	8
Ulcers	..	...	154	...	4948
Other Diseases	..	..	4	1	89
Carried forward ..	84	..	1720	86	24631

Table I—*continued.*

Return of Diseases and Deaths for the year 1920 for the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admission	Deaths	Anmission	Deaths	Total
Brought forward ..	84	..	1720	86	24631
OCAL DISEASES—*(contd.)*					
JURIES					
General	..	..	45	1	531
Local	1	..	123	1	2020
Burns	..	..	4	1	3
Tumours, Simple	..	..	24	..	21
do Malignant	..	..	8	3	3
Other Diseases	..	..	..	..	1
Poisons	..	..	4	..	1
Nematoda—					
Ascaris	..	..	40	..	24
Filariasis	..	..	47	1	108
Strongylus	..	..	..	..	2
Ankylostomiasis ..	..	..	315	7	1152
Other Diseases ..	..	..	..	..	48
Insecta—					
Myiasis	..	..	5	..	116
Other Diseases ..	..	..	..	..	2
Total ..	85	..	2335	100	28663

FINANCIAL, MEDICAL DIVISION.

Statement of Expenditure and Revenue for the year 1920.

EXPENDITURE.

Details	Estimated					Actual				
	Rs.	cts.	£	*s.*	*d.*	Rs.	cts.	£	*s.*	*d.*
MEDICAL.										
Personal Emoluments ..	124,038	0	8,269	0	0	110,823	30	7,388	4	5
Other Charges.										
Fuel and Light ..	6,000	0	400	0	0	5,094	98	339	13	4
Incidental Expenses ..	600	0	40	0	0	303	02	20	4	0
Maintenance of Hospitals ..	25,000	0	1,666	0	0	28,137	20	1,875	16	3
Medical and Surgical Stores ..	25,000	0	1,667	0	0	34,948	48	2,329	17	11
Passages ..	22,500	0	1,500	0	0	14,526	60	968	8	10
Purchase of Opium ..	3,000	0	200	0	0	2,442	43	162	16	7
Rent of house ..	2,280	0	152	0	0	2,258	50	150	11	4
Travelling Expenses ..	1,300	0	87	0	0	398	21	26	10	11
Total Expenditure ..	209,718	0	13,981	0	0	198,932	72	13,262	3	7
Special Expenditure-										
Bedsteads and wire mattresses for Hospitals ..	1,500	0	100	0	0	924	31	61	12	5
Furniture and Equipment for New district Dispensary ..	1,800	0	120	0	0	1,416	26	94	8	4
Equipment of Travelling Hospital	6,000	0	400	0	0	1,605	..	107	..	..
Total Expenditure ..	9,300	0	620	0	0	3,945	57	263	20	9

REVENUE.

Details	Estimated					Actual				
	Rs.	cts.	£	*s.*	*d.*	Rs.	cts.	£	*s.*	*d.*
Hospital charges from European and Native Hospitals ..	8,500	0	567	0	0	9,808	33	653	17	9
Sale of Opium ..	6,000	0	400	0	0	5,158	75	343	18	4
Total Revenue ..	14,500	0	967	0	0	14,967	08	997	16	1

REPORT ON THE MEDICAL DIVISION, PEMBA, FOR THE YEAR 1920.

General.—Last year's report closed on a note of high promise. There seemed to be a reasonable hope that a second Medical Officer would be appointed to Pemba and an organized Hospital established at Weti. It was anticipated that the recent developments of medical work in the island would be much further extended and that full advantage would be taken of the undoubted willingness to accept modern medical and surgical treatment already shown by the natives.

It was further suggested that in this way a fatal blow might be struck at the devil worship, witchcraft and superstition so terribly prevalent in the island.

These hopes have not been substantiated. No new Medical Officer was appointed to the Protectorate service until the close of the year, and the money voted for a Medical Officer's house at Weti was diverted to Zanzibar.

Under these circumstances it has only been possible to endeavour to hold on to the ground already won and carry on the work of the Hospital at Chake Chake on the same lines as last year.

Dr. and Mrs. Howard were resident throughout the year as Medical Officer and Sister in Charge, and the subordinate and menial staff have remained the same.

All have worked most loyally and indefatigably to cope with the ever increasing demands on their time and energy. It is apt to be forgotten by those who look forward with certainty to the enjoyment of half-holidays, bank holidays and Sundays that participation in such privileges practically never falls to the lot of the workers in a small but busy Hospital.

The number of new out-patients rose from 6,102 last year to 7,080 this year, and the repetition cases have similarly increased from 10,974 to 11,767. As was pointed out in last year's report, the number of repetition cases forms the most valuable criterion of the work of an out-patient department, for it represents the attendances of those who really value the treatment received and are willing to continue it till they are well.

Quite a large number of patients suffering from ulcers have attended regularly as out-patients until cured. Not a few who lived at a distance, and for whom accommodation could not be found in the Hospital, have hired lodgings in the town in order to attend regularly. As a consequence somewhat fewer ulcer cases have been admitted to Hospital, viz., 53 as against 78 last year.

The number of in-patients amounted to 334 this year as against 347 last year. This slight decrease is more than counter balanced by the increase in the operation cases admitted to Hospital from

180 to 228. The special effort of the Hospital has again been made in the direction of surgical treatment. Pemba undoubtedly presents great surgical opportunities. Cases suitable for operation are many and the people have full confidence and willingly undergo operation. Although the population of Pemba is only two-fifths of the total of the Protectorate as compared with three-fifths in Zanzibar, and although the Hospital in Chake Chake has only 24 beds as compared with three times that number in Zanzibar Hospital, yet more operations were performed in Pemba than in Zanzibar in both 1919 and 1920.

The theatre team for major operations consists of the Medical Officer, Sister, Native Dresser and Dispenser-Anæsthetist. Unfortunately our staff does not allow of the duplication of any of these posts, and any indisposition of any member may cause the postponement of an important operation.

Structural Alterations.—The bathroom and fly-proof latrine in connection with the men's ward, which was under construction at the end of last year, was completed this year; also the leaky skylight in the consulting-room was removed and two windows were opened out in the walls.

The two private rooms for the isolation of locally infective or suspicious cases could not be built during 1920, but are provided for in the estimates of 1921.

OFFICIALS.

European Officials.—The health of the European Officials has been fairly good. This year the staff included a number of new members with no acquired immunity to malaria, so a moderate number of attacks of that disease was to be expected. A newly-appointed Inspector of Plantations proved unusually susceptible to malaria. He acquired a double infection with both sub-tertian and tertian parasites. He had six severe attacks of fever in less than four months and was then invalided to Zanzibar and later, on developing crescent infection, he was sent home to England. No other member of the staff was invalided. This comparatively favourable record must be attributed mainly to the use of prophylactic quinine, which has been taken regularly by most officials.

As was pointed out last year, the observance of such a rule of prophylaxis should be compulsory on all officials who are sent to an intensely malarious locality like Pemba instead of being left as now to the persuasive powers of the Medical Officer.

Subordinate Staff.—The health of the Subordinate Staff has been good. Only five patients were admitted to the Hospital. There was one case of blackwater fever. This patient had recently arrived from Zanzibar to act as clerk in the Medical Department. He must have been exceptionally susceptible, for he developed black-

water fever within two mouths of his arrival in Pemba, and during convalescence he suffered from two relapses. He was then invalided to Zanzibar, where he suffered from a second attack a few months later.

The indifferent housing accommodation of the Subordinate Staff in Chake Chake and the lack of opportunities for exercise or relaxation has often been stated in previous Medical Reports. It is to be regretted that nothing has been done during the year to improve matters in either of these directions.

The Prison.—The health of the prisoners has remained good throughout the year. Only nine prisoners required to be admitted to the Hospital, of whom one died from chronic colitis, secondary to dysentery of long standing. Two other patients had severe attacks of influenza, one case being complicated by pneumonia and jaundice, but they both recovered.

Forty-four patients were found on admission to be suffering from ankylostomiasis. These were treated as out-patients and cured before their sentences expired.

NATIVE HOSPITALS AND DISPENSARIES.

Prevalent Diseases.

Malaria, chiefly subtertian, is endemic throughout the island. Comparatively little can be done in the way of prophylaxis, except the regular administration of quinine. Compulsory quinine prophylaxis is imposed on the Subordinate Staff, the Police, and the school children—4,260 doses having been administered during the year in Chake Chake alone, and 10,876 doses if the returns from Weti and Mkoani are included as well.

The suggestion made in last year's report that the small doses of quinine tannate powder, used for treating infant children of Indians who suffer from malaria, should be sold at the cost of one pice instead of one anna as formerly has been carried into effect. It is probably already bearing fruit in better prophylaxis and treatment. Owing to the smallness of the dose required, the price is still above the actual cost price of the drug, so that the Government suffers no loss.

Filariasis works ravages amongst the natives. Filarial fever is the cause of much ill-health, and it is probable that a very great majority of the inguinal and scrotal operations so frequently required are indirect results of filarial infection.

Ankylostomiasis is very widely spread, and this disease is probably the cause of much vague ill-health and chronic rheumatic pains which often appear in the out-patient returns under the headings "Anæmia" and "Rheumatism" respectively.

The continued efforts which have been made during the last two years to combat this disease, both amongst in and out-patients, seem to have borne some fruit. At any rate it is now exceptional to see the severe cases that were formerly so common, and the people all over the island are getting to know that the disease can be cured and willingly come for treatment.

Two-hundred-and-five in-patients and 1,066 out-patients were treated during the year. In all cases the stools were examined before treatment in order to establish a certain diagnosis, but comparatively little could be done in the way of re-examination of stools in order to check the results of treatment.

A great majority of the patients who were admitted to Hospital for other diseases or for operative treatment were tested for ankylostomiasis. The percentage of these patients found infected worked out as high as 95 per cent. It is true that in many cases the degree of infection was slight, but it seemed expedient to treat and if possible cure even these milder infections, especially before undertaking operative treatment.

As last year oleum chenapodii was the mainstay of treatment, unfortunately the supply of this drug ran short for more than six months in the middle of the year, and thymol was substituted. The results with thymol were less satisfactory and the difficulty of its administration to out-patients was greater.

No death from the disease occurred after treatment. The only death recorded is that of a certified lunatic with intense anæmia and probably a fatty heart who was awaiting transference to the Asylum in Zanzibar.

Urinary Bilharziasis is very prevalent, 82 cases being recorded. Unfortunately it was not possible to undertake radical treatment with tarter emetic injections, nor were any investigations made as to the habit of the snail carrier of the worm. It seems to me probable that the infection is acquired when working in the swamp rice fields, but this question urgently demands investigation. With a second Medical Officer in Pemba it should be possible to organize radical treatment and much long-continued suffering might thus be relieved.

Yaws is still prevalent and a number of recently-infected cases have been seen. Tertiary yaws is constantly encountered in the out-patient department. As was pointed out last year, the fact that, though tertiary yaws is described in all text books of tropical medicine, yet it is not included as a heading in the list of diseases for the Colonial Medical Reports is a serious calamity. It often leads to failure to recognize many cases of the disease which, if properly treated, could be promptly cured.

During the year 24 intramuscular injections of Neosalvarsan were given; in other cases reliance had to be placed on Castellanis'

Yaws Mixture. The further development of the Neosalvarsan treatment of this disease on a large scale is most desirable and would well repay the money spent.

Ulcers.—The systematic classification and treatment of ulcers has been carried out on the same lines as are recorded in last year's report. In the case of out-patients' regular attendance until a cure is effected is insisted on. Twenty-two phagedænic ulcers were scraped clean under an anæsthetic, and 12 of these were later cured by Thiersch's grafting; the others healed naturally.

Operations.—Two hundred and sixty-five operations were performed during the year—37 on out-patients and 228 on in-patients. Local anæsthesia was employed on 96 occasions.

General anæsthesia was induced 169 times (108 times by the Sister and 61 times by the Dispenser).

There was one death from delayed chloroform poisoning and acidosis three days after an operation in an elderly man for the removal of a large elephantiasis scroti. No other fatality in any way attributable to the anæsthetic occurred.

The other deaths after operation occurred in two almost hopeless cases of strangulated hernia; in a patient whose breast had been amputated for advanced sarcoma with a fungating ulcer and in a very severe burn.

The following is the list of the main operations performed :—

Radical cure of Hernia (Halstead's Method)	... ...	39
Radical cure of Hydrocele (Double Hydrocele 13) (Single Hydrocele 9) (Hæmatocele 5)	...	27
Amputation of the Scrotum (for Elephantiasis 6, for Lymph Scrotum 2)	... ...	8
Castration (for suppurating Hydrocele or for Hæmatocele)	...	6
Cataract extraction	... ...	41
Iridectomy (for visual purposes)	... ...	1
Hysterectomy	... ...	8
Ovariotomy	... ...	1
Suture and cleaning of wounds	... ...	22
Thiersch's grafting	.. ..	12
Removal of tumours (simple tumours 20) (malignant tumours 3)		23

The common type of operation corresponds very closely with those recorded last year.

The simple tumours removed numbered 20, and comprised the following :—Lipoma, myxoma, adenoma, keloidal fibroma, fibroid bursae (juxta-articular nodules), compound ganglion, sebaceous cyst, dermoid cyst, dentigerous cyst, cystic hygroma and epulis.

The malignant tumours number three; firstly the case of fungating sarcoma of the breast above mentioned; secondly a case of myxo-

sarcoma of the anterior axillary wall; and thirdly a case of recurrent nodules in a woman from whom a melanotic sarcoma of the heel had been removed the year before. In this latter case the original growth was a black fungating cauliflower-like tumour of the heel which had developed in a chronic ulcer caused by old untreated foot yaws. This is the third case of melanotic sarcoma occurring under similar circumstances that I have seen in the Protectorate. In each case the growth has been on the heel and has originated in a chronic ulcer of long standing. In all cases the wound healed well after excision of the tumour, but the other two cases were not traced long enough to determine whether recurrence or dessemination of the disease occurred.

Two inoperable cases of sarcoma of the neck and axilla respectively were seen in the out-patient department.

Dispensaries.—Sub-Assistant Surgeon Joshi and Dispenser I. A. Gomes have been in charge at Weti and Mkoani respectively.

The number of in-patients at both places is approximately the same as last year, the out-patients show an encouraging increase, especially at Weti.

The Future.—The above report shows that the old prejudice against European treatment with which the Medical Department had formerly to contend has been overcome, and that the Pemba native is prepared to give modern methods of surgery and medicine a fair trial. If the Government take advantage of the opportunities offered and provide sufficient staff, buildings and drugs the results may be brilliant and redound to the credit of a Tropical Administration.

On the other hand the native is as yet by no means weaned from his old ideas, his belief in witchcraft and in the power of devils, and a little neglect and discouragement on the part of the Authorities will soon empty the Hospitals and Out-patient Departments and drive the people back to their old methods, and all the efforts of recent years will be wasted.

R. HOWARD,
Medical Officer.

Pemba, 23rd November, 1921.

REPORT ON THE PUBLIC HEALTH DEPARTMENT
FOR THE YEAR 1920.

During the greater part of the year the duties of the Medical Officer of Health were undertaken by the Principal Medical Officer, who performed this work in addition to his own. Dr. Spearman arrived from leave on November 5th and assumed duty as Medical Officer of Health on transfer from the Uganda Protectorate. Under these circumstances it is possible to do little more than give tables showing the routine work performed during the year.

TABLE I.

GENERAL SANITATION, TOWN, 1920.

The routine work performed during the year is tabulated in the following table :—

Inspectors	18
Inspections of premises	2,784
General nuisance notices	364
Prosecutions and convictions	—
Visits to Hotels and Boarding-Houses	2,550
Notices served	29
Godowns inspected	861
Notices served	4
Visits to Bakehouses	174
Visits to Dairies and Cowsheds	911
Notices served	34
Visits to Food Stalls and Markets	2,945
Notices served	—
Average number of Cesspools oiled weekly	242
Average of oil used weekly (gallons)	10
Latrines regularly cleaned	4
Public Urinals regularly cleaned	5
Vacant Lands and Graveyards regularly cleaned	155
Houses cleaned and disinfected	—
Cartloads of refuse removed	46,637
Rats collected, trapped or poisoned	13,194
Pariah Dogs and Cats destroyed	40
Burials of Paupers and others carried out	61
Visits to dwelling-houses, &c., for mosquito nuisances ...	30,915
Notices served	252
Prosecutions and convictions	—

Dr. Aders, Economic Biologist, was in charge of the Biological Section and was responsible for the administration of the Veterinary Section throughout the year.

Water Supply.—The Zanzibar Government obtained the services of the Government Analyst, Nairobi, during the middle of the year. He analysed samples of water from the Chem-Chem Spring and also from the recently opened-up Spring at Bu-Bu-Bu. The results are shown in Table II below.

It is satisfactory to note that in both cases the water is of excellent quality and purity. The Chem-Chem Spring was inspected by the Director of Public Works, Principal Medical Officer, and Medical Officer of Health in December with a view to enclosing the ground in the immediate neighbourhood and protecting this area from contamination.

Table II.

WATER ANALYSIS REPORT.

Report No. Z. 2/20.

Label on bottle :—

1. Bu-Bu-Bu Spring collected one foot from surface on 20/6/20.

2. Bu-Bu-Bu Spring collected two feet from surface on 22/6/20.

		Parts per 100,000.	
		1.	2.
Nitrogen as saline ammonia	...	nil	nil
,, ,, albuminoid	...	·0058	·0020
,, ,, nitrate	...	·045	·054
,, ,, nitrite	...	nil	nil
Oxygen absorbed, 3 hours lab. temp.	...	·0106	·0066
Chlorine	...	1·335	1·35
Hardness	...	25·5	24·5
Temporary	...	24·0	23·0
Permanent	...	1·5	1·5
Solid residue	...	36.4	36·4
On ignition	...		
Sulphate (SO_4)	...	trace	trace
Magnesia	...	nil	nil

Remarks :—This is a hard water uncontaminated by organic matter of either animal or vegetable origin, and well suited for the purpose of a public supply.

The absence of magnesium and the low content of chlorides are factors in its favour in connection with its use for steam-raising purposes. The hardness is almost entirely due to the presence of calcium carbonate and is mainly " temporary ". It is a water which is not likely to cause pitting of boiler plates, nor would one expect it to form a hard scale in a boiler which was regularly and frequently blown out and cleaned. Waters of this type, when used for steam-raising, usually give rise to a loose deposit which is capable of easy removal from the boiler.

The water flowing from the spring will require protection from the influx of surface water, which would be liable to carry with it undesirable matter, such as products of rotting vegetation.

Report No. Z. 3/20.

Main Spring at Chem-Chem, collected on 24/6/20.

		Parts per 100,000
Nitrogen as saline ammonia	...	nil
,, ,, albuminoid ammonia	...	nil
,, ,, nitrate	...	·04
,, ,, nitrite	...	nil
Oxygen absorded, 3 hrs. Lab. temp.	...	·004
Chlorine	...	1·3
Hardness	...	28·5
Temporary	...	26·0
Permanent	...	2·0
Solid residue	...	39·0
Sulphate (SO_4)	...	trace

Remarks :—This is a hard water of high degree of organic purity, and is almost undistinguishable from the Bu-Bu-Bu Spring water, the only difference being, so far as one can see, that the latter is not quite so hard.

The remarks in report Z. 2 regarding the Bu-Bu-Bu water are equally applicable to the Chem-Chem supply.

Report No. Z. 6/20.

Sample of water from the cavern at Chukwani collected on 25/6/20.

		Parts per 100,000.
Nitrogen as saline ammonia	...	nil
,, ,, albuminoid ammonia	...	nil
,, ,, nitrate	...	·06
,, ,, nitrite	...	nil
Oxygen absorbed, 3 hrs. at Lab. temp	...	·008
Chlorine	...	40·8
Hardness	...	37·0
Temporary	...	23·5
Permanent	...	13·5
Solid Residue	...	113·7
Sulphate (SO_4)	...	marked

REMARKS :—This is an organically pure but very hard water containing an excessive amount of chlorides, which are possibly introduced by sea water which may get into the cavern in small quantities.

As a source of water for public supply it is by no means so satisfactory as the Bu-Bu-Bu Spring water.

A. C. BARNES,
Analyst.

Zanzibar, June 28th, 1920.

Experiments on the softening of Bu-Bu-Bu water by sodium carbonate.

With a view to the determination of the degree of softening of this water attainable by the use of sodium carbonate as the softening agent a number of experiments were made. The water was treated both in the cold and in the hot with varying amounts of sodium carbonate, and an estimation of the total hardness was made in each case after filtration.

RESULTS.—COLD PROCESS.

Parts of sodium carbonate (Na_2CO_3 anhydrous) per 100,000 of water	Total hardness after $1\frac{1}{2}$ hrs. degrees
5	19
10	15
20	10·5
30	9
40	8
50	6·6
Hardness of original water	25

HOT PROCESS.—The sodium carbonate (in solution) was added to the water which was then heated to 70 degrees Centigrade and kept at that temperature for an hour.

Parts of anhydrous sodium carbonate per 100,000 of water.	Total hardness after treatment.
2	18
4	16·5
6	14
8	13
10	12
12	10·5
14	9
16	8
30	4

Should it at any time be considered desirable to soften this water before using it for steam-raising purposes, sodium carbonate may be used as the softening agent. The hot process is the more satisfactory for two reasons : a considerably less amount of the carbonate

is required to perform the work, and the risk of corrosion of the boiler plates through excessive use of the material is not so great. The latter point is most important—no more of the sodium carbonate than is necessary to attain the requisite degree of softening should be used It is advisable not to attempt to get the maximum softening obtainable, as that entails the risk of a certain quantity of the carbonate remaining in the water, where it may do more or less serious damage to the boiler.

From the above experimental details it is indicated that 15 parts of sodium carbonate per 100,000 of the water would be a safe amount to use; that is with the hot process. This amount is equivalent to 15 pounds of the anhydrous salt per 10,000 gallons of water, or 25 pounds of "washing soda" (Na_2CO_3. 10 H_2O) per 10,000 gallons.

A. C. BARNES,
Analyst.

Zanzibar, June 28th, 1920.

Report No. 107/B.

REPORT.

On Bacteriological Examination.
Samples of Water from Zanzibar

In considering the Bacteriological findings, notice has to be taken of the fact that as no ice was placed in the box after leaving Zanzibar and as the ice had all disappeared on receipt in the Laboratory, presumably the samples were at the temperature of their surroundings for about 36 hours. This would permit of a rapid multiplication of any Bacteria present in the water.

I. Bu-Bu-Bu Spring.

(Sample No. 76.)

Colonies on Bile Salt Media Plates (Presumtive Intestinal) at 37°C uncountable per c.c. in 48 hours (non-Lactose fermenters).

B. coli less than 20 per litre.
Streptococci less than 20 per litre.
B. enteritidis 100—1,000 per litre.

REMARKS.—This sample does not show signs of recent contamination. No B. coli were found in the quantity available for examination.

Streptococci were also absent from the quantity.

It may be considered satisfactory.

II. Main Spring, Chem-Chem.

(Sample No. 77.)

Colonies on Bile Salt Media Plates (Presumptive Intestinal) 37°C uncountable per c.c. in 48 hours (non-Lactose fermenters).

B. coli less than 20 per litre.
Streptococci less than 20 per litre.
B. enteritidis less than 20 per litre.

REMARKS.—This sample shows a very satisfactory absence of organisms indicative of contamination in the quantities examined.

III. Well at Chukwani.

(Sample No. 80.)

Colonies on Bile Salt Media Plates (Presumptive Intestinal) at 37°C uncountable per c.c. in 48 hours.

B. coli 20 to 100 per litre.
Streptococci less than 20 per litre.
B. enteritidis 20—100 per litre.

REMARKS.—Contaminated.

(*Sd.*) P. A. CLEARKIN,
Acting Senior Bacteriologist.
E.A.P.

Bacteriological Laboratory, Nairobi, 15th July, 1920.

Drainage.—No alterations or improvements were effected in the drainage system during the year.

Cesspools and Privy Pits.—The cesspools are still without water seal traps, but the number of cesspools provided with movable and accurately fitting covers, and which are oiled weekly, increased from 230 to 287. Over 500 gallons of a mixture of kerosine and crude oil were used in these cesspools during the year.

Sewage Disposal.—No alterations or improvements were made in sewage disposal during the year. Efforts were continued as during last year to improve privy-pit systems as regards ventilation, light, isolation from kitchens, and position against an outside wall.

Town Refuse Collection and Disposal.—The collection of house, &c., refuse was continued as last year. New refuse bins replaced old ones where necessary.

The Destructor performs a very useful function, but is a nuisance to its immediate locality on account of smoke, dust and flies.

The rail incinerators in N'Gambo, the native town, are in regular use and considerably lessen local dumps.

Dairies and Cowsheds.—The town dairies and the quality and purity of the milk still leave much to be desired.

The milch cows, for the greater part Bombay cattle, are housed in the middle of the crowded town in insanitary byres. Owing to the prevalence of East Coast fever, it is impossible to graze these cattle without regular dipping. Consequently these unfortunate animals are doomed to remain tied up on a cement floored stable for the whole of their lives. The buildings are not primarily built for dairies and have a few make-shift alterations to render them suitable.

The Indians and natives in charge of them have the most rudimentary ideas of hygiene, and constant watchfulness is necessary to obtain anything approaching cleanliness.

In the coming year an analysis of the milks, both chemical and bacteriological, will be undertaken.

It is unfortunate that the new Model Dairies and Dipping Tank cannot be used for lack of water. To give Zanzibar a pure and wholesome supply of milk it is necessary that the dairy cows are properly housed and under proper supervision, and it is therefore earnestly hoped that the difficulties of the water suply to the New Dairies will be overcome shortly.

Markets.—No alterations were made in the Markets during the year.

Town Planning and Improvement.—Nothing further was done as regards Town Planning. No committee meetings were held.

TABLE III.

Breeding places of various kinds of mosquitoes found in Zanzibar Town during 1920.

Months	Tanks, Cisterns, Drums & Barrels			Drains & Cesspools			Trees & Plants			Old tins, broken bottles etc.			Boats, etc.			Swamps & Pools			Mosquito traps			Total			Rain fall.
1920	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	Inches.
January ..	17	0	0	2	2	2	2	0	0	1	0	0	0	0	0	0	0	4	0	0	0	22	2	6	0·00
February ..	13	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	14	0	3	0·08
March ..	13	1	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	9	0	0	0	14	4	9	1·19
April ..	18	0	3	0	2	1	0	0	0	6	0	1	0	0	0	0	0	4	0	0	0	24	2	9	8·47
May ..	8	0	0	2	1	0	0	0	0	5	0	0	0	0	0	0	0	5	0	0	0	15	1	5	15·09
June ..	17	3	1	0	0	2	0	0	0	3	1	1	0	0	0	0	1	5	0	0	3	20	5	12	0·77
July ..	27	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	10	0	0	4	30	0	14	0·13
August ..	20	2	1	0	2	1	0	0	0	1	1	2	0	0	0	0	0	3	0	0	0	21	5	7	1·41
September ..	9	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	9	5	2	1·63
October ..	5	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5	1	5	5·88
November ..	17	0	0	0	2	0	0	0	0	2	0	0	0	0	0	3	0	4	0	0	0	22	2	4	1·76
December ..	20	2	0	0	5	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	21	7	2	7·62
Total ..	184	9	9	4	20	6	2	0	0	24	2	5	0	0	0	3	3	51	0	0	7	217	34	78	44·03

S—Stegomyia fasciata. C—Culicinæ. A—Anophelinæ.

Mosquito Preventive Measures.—The town is divided into areas, and the Mosquito Inspector in charge of each area visits every house weekly.

Amongst the intelligent and educated people their visit is welcomed, and much is done to reduce the number of breeding-places of mosquitoes. Unfortunately there is a good deal of apathy and passive resistance amongst the less-informed classes which the Inspectors are not always able by themselves to overcome.

Their authority should be backed by visits from the Medical Officer of Health, and, as mentioned in last year's report, a survey of each house should be made. It is difficult, however, for the Medical Officer of Health, owing to the various calls on his time, to undertake this.

PART II.—PREVALENCE OF CERTAIN COMMUNICABLE DISEASES.

The Protectorate was free from any serious outbreak of infectious diseases during the year. There was a slight recrudescence of influenza in the last two months of the year, fortunately of a mild type.

Influenza.—There was one death due to influenza during the year as compared to 13 last year.

Cerebro-Spinal Meningitis.—One case, a Shihiri employed by the African Wharfage Co. He was removed to Gulioni Infectious Diseases Hospital, where he died.

Dysentery.—Nine deaths were reported as compared to 14 deaths last year.

Plague.—No cases. 11,863 rats were examined. In four suspicious cases sub-inoculation in healthy rats proved negative.

Tetanus.—Two deaths were reported during the year against one in 1919.

Tuberculosis.—Forty-one deaths were reported by qualified practitioners and 84 by unqualified persons due to Pulmonary Tuberculosis as against 37 and 110 respectively for 1919.

Small-Pox.—Seven cases were reported during the year with one death as compared to four cases and one death last year. Five of these were imported, one from Suez, who died, and four from Bombay. Of the other two, one occurred amongst the crew of a dhow from the Persian Gulf, and the other in an Arab in the town. Cases and contacts were removed to Gulioni Hospital, and no further cases developed.

Malaria.—Sixteen deaths from this disease were reported by qualified practitioners as against 14 last year.

Leprosy.—Sixteen new cases were admitted during the year, whilst the number of deaths was seven as compared to three admittances and 12 deaths during the last year.

Walezo Leper Asylum, Zanzibar.

The Leper Asylum and Poorhouse are under the charge of the Catholic Mission. A weekly visit is paid by the Medical Officer of Health or Sub-Assistant Surgeon.

No repairs or alterations were effected during the year. The Lloyd Mathews Memorial Hospital is now practically a ruin.

Table IV.

Walezo Leper Asylum, Zanzibar.

Particulars	Males	Females	Total
Remaining on 1st January, 1920 ...	26	47	73
Admitted during the year ...	13	4	17
Discharged ,, ,, ,, ...	...	...	...
Died ,, ,, ,, ...	4	3	7
Escaped ,, ,, ,, ...	4	1	5
Remaining on 31st December, 1920 ...	31	47	78

Leper Settlements, Pemba.

Particulars	Nduni	Kengeja	Pujini
Average monthly numbers ...	39	27	61

PART III.—PREVENTION OF INFECTIOUS DISEASES.

Port Health Service.

The table given below shows the work done during the year.

The number of ships arriving was 306 compared to 188 in 1919, and the total number of passengers increased from 9,341 in 1919 to 12,059, and the total number kept under surveillance was 3,391 as compared with 2,051 in 1919.

The vaccination of passengers numbered 2,119 as compared to 929 in 1919.

The number of dhows arriving and examined was 2,223 as compared to 1,795 in 1919.

TABLE V.

PORT SANITATION RETURN 1920.

	Arrivals			Restricted ships	Ships Claytonised	Passengers landed	Passengers under surveillance	Persons Vaccinated	Persons placed in quarantine
	British	Foreign	Total						
Steamers—									
January ..	21	7	28	..	..	869	136	80	...
February ..	17	6	23	2	2	1075	158	75	480
March ..	16	8	24	..	3	674	305	183	..
April ..	26	3	29	1	4	1574	274	230	692
May ..	25	4	29	..	6	848	325	164	..
June ..	23	4	27	..	13	983	376	213	..
July ..	20	4	24	..	14	760	213	190	..
August ..	20	5	25	..	12	1044	403	324	..
September ..	16	4	20	..	12	608	207	174	..
October ..	22	6	28	..	10	1191	644	320	..
November ..	18	3	21	..	5	809	204	87	..
December ..	17	5	22	1	..	1613	146	79	532
Sailing ships ..	3	1	4	..	..	11	..	..	..
Men of War ..	2	..	2	..	..	..	..	..	..
Total ..	246	60	306	4	81	12059	3391	2119	1704
Total for 1919 ..	166	24	190	8	4	9341	2051	929	1229
Dhows—									
January ..	177	50	227	..	1	791	247	93	..
February ..	176	88	264	2	4	860	142	87	27
March ..	179	138	317	..	8	1410	24	13	..
April ..	137	26	163	..	3	640	..	..	..
May ..	93	23	116	..	..	393	..	..	..
June ..	88	18	106	..	1	322	3	3	..
July ..	101	22	123	..	..	417	5	5	..
August ..	100	16	116	..	..	452	13	9	..
September ..	125	20	145	..	..	443	11	3	..
October ..	174	33	207	..	..	510	9	6	..
November ..	185	51	236	..	..	400	5	2	..
December ..	158	45	203	..	..	371	23	22	..
Total ..	1693	530	2223	2	17	7009	482	243	27
Total for 1919 ..	1219	576	1795	108	99	5550	381	300	81

Quarantine Station.

The total number of persons quarantined during the year was 1,731 as compared to 1,310 in 1919.

Table VI.

Return of persons quarantined during 1920.

	Remaining	Admitted	Total	Discharged	Died	Remaining	Largest No. on one day	No. of days station occupied	Remarks.
January ...	...	...	...	...	...	...	...	...	
February ...	...	507	507	279	...	228	480	25	(4 dhows 27 passengers (s.s. "Karapara."
March ...	228	...	228	228	...	...	228	5	
April ...	...	692	692	635	1	56	692	24	s.s. "Karapara."
May ...	56	...	56	56	...	...	56	4	
June ...	...	...	...	...	...	...	...	...	
July ...	...	...	...	...	...	...	...	...	
August ...	...	...	...	...	...	...	...	...	
September ...	...	...	...	...	...	...	...	...	
October ...	...	...	...	...	...	...	...	...	
November ...	...	...	...	...	...	...	...	...	
December ...	...	532	532	193	1	338	532	12	s.s. "Taroba."
Total ...	284	1731	2015	1391	2	622	1988	70	

Table VII.

Infectious Diseases Hospital.

The following table shows the number of cases treated at the Infectious Diseases Hospital, at Gulioni, during the year 1920 :—

Diseases	Remaining of 1919	Admitted	Discharged	Died	Remaining
Broncho-Pneumonia ..	..	1	1	..	..
Cerebro-spinal Meningitis ..	..	1	..	1	..
Chicken-pox ..	..	1	1	..	..
Malaria ..	..	3	3	..	..
Measles ..	..	3	3	..	..
Small-pox ..	1	7	7	1	..
Contacts ..	4	22	26	..	..
Total ..	5	38	41	2	..

PART IV.—BACTERIOLOGICAL AND CHEMICAL LABORATORIES.

An Indian Bacteriological Assistant, Mr. A. G. Kark, was appointed during the year and took up his duties on July 15th. He has proved himself an exceptionally able and competent laboratory worker and has already made a great difference to the work done in the Laboratory. In addition to the routine bacteriological work, such as examination of blood smears, fæces, sputum, &c., the preparation of vaccines, the performance of Wasserman's reaction, and analysis of water were undertaken, and in the forthcoming year it may be hoped that the amount of work done and the efficiency of the Laboratory generally will be greatly increased.

The work done during the year is analysed in the subjoined table.

TABLE VIII.

PUBLIC HEALTH DEPARTMENT, ZANZIBAR.

Bacteriological Laboratory Return for the Year 1920.

BLOOD 297

	Positive	Negative
Filaria ...	2	1
Obermeier's Spirillum ...	...	...
Kala Azar ...	...	...
Hæmaglobin ...	...	...
Differential Counts ...	3	...
Arneth Counts ...	...	...
Widal's test ...	...	...
Wasserman's ...	3	3
Malaria	141	... 144

URINE 48

	Positive	Negative
Sugar ...	3	2
Albumin ...	9	7
Casts ...	4	1
Bilharzia ...	7	8
Urea ...	...	...
Catheterial Examination ...	...	...
B. Coli ...	1	1
Others:—		
Pus ...	2	...
Blood ...	3	...
Gonococci ...	13	26

FAECES 805

	Positive	Negative
Amœbæ coli ...	5	24
Ankylostoma ...	640	117
Ascaris ...	5	5
Tænia ...	3	3
Other Parasites ...	...	...
Pus ...	...	...
Blood ...	...	...
B. Shiga ...	...	...
Cultural Examination ...	...	...
Rectal Bilharzia	1	1

SPUTUM 71

	Positive	Negative
Tubercle Bacilli...	16	54
Pneumo Cocci ...	1	...
Micro Cocci Catarrhalis ...	...	...
Cultural Examination ...	...	...
Others ...	...	...

NASAL SECRETIONS 15

	Positive	Negative
Leprosy ...	9	6

Rat Examination 11863

	Positive	Negative
Rat spleens for b. pestis ...	4*	11859

Miscellaneeus

	Positive	Negative
Throat Swabs for Diphtheria ...	...	4
Skin Scraping for Tinea ...	2	1

VACCINES 4

	Number
Staphylococci ...	3
Streptococci ...	...
Gonococci ...	...
B. Coli ...	1
Shiga ...	...
Catarrhalis ...	...
Others ...	...

CHEMICAL 5

	Number
Milk ...	...
Water ...	5
Food-Stuffs ...	...
Beverages ...	...
Tinned Provision ...	...
Minerals ...	...
Legal Cases ...	...
Others ...	...

Pathological Examination

	Malignant	Innocent

REMARKS:—* In the four *suspicious* cases Sub-inoculations to rats proved negative. During the year 282 private Clinical cases have been Examined in the Laboratory.

PART V.—VITAL STATISTICS.

Population.—The subjoined tables give the results of the Census taken in 1910.

Table IX.

Population of Zanzibar and Pemba—Census 1910.

	Males	Females	Children	Total
Zanzibar:				
Zanzibar Town	15,122	14,304	5,396	34,822
Mwera District	11,239	13,206	4,656	29,101
Chwaka District	5,617	7,458	4,553	17,628
Mkokotoni District	11,013	14,242	6,818	32,073
Total ...	42,991	49,210	21,423	113,624
Pemba:				
Chake Chake District	10,757	13,597	8,958	33,312
Weti District	11,416	11,002	8,307	30,725
Mkoani District	6,290	7,295	5,487	19,072
Total ...	28,463	31,894	22,752	83,109
Grand Total ...	71,454	81,104	44,175	196,733

The Vital Statistics under present conditions are unreliable and must be so until a new Census is taken and the registration of births more strictly enforced.

Births.

(*a*) The total number of births registered in the Town Districts of Zanzibar during the year 1920 :—

Males	255	
Females	218	
	—	473
Still-born ...		37
Total		510

(*b*) Nationalities of births registered in the Town Districts of Zanzibar during 1920. .

Ismaili Khoja	125	Gazija	12
Bohora	69	Shihiri	4
Hindu	67	Anglo Indian	4
Mohammedan Indian	41	European	4
Swahili	41	Baluchi	2
Arab	33	Parsee	2
Ithnasheri Khoja	28	Somali	1
Goan	23	Chinese	1
Memon	15	Persian	1
		Total,	473

(*c*) Total number of births registered in the Island of Zanzibar since 1913.

TABLE X.

Districts	1920	1919	1918	1917	1916	1915	1914	1913
Town Districts ...	473	341	418	305	296	332	401	576
Mkokotoni Dist. ...	1573	720	930	1,559	1,099	1,023	511	634
Mwera ,, ...	540	313	479	430	490	426	245	287
Chwaka ,, ...	600	402	384	392	469	458	190	253
Total ...	3,186	1,776	2,211	2,686	2,354	2,239	1,347	1,750

(*d*) The comparative figures as registered are shown in the following table :—

TABLE XI.

During		1913	1914	1915	1916	1917	1918	1919	1920
Town Districts	Births ...	576	401	332	296	305	418	341	473
	Deaths ...	1128	1317	1008	1168	1255	1359	1180	1083
Out-Districts	Births ...	1174	946	1907	2058	2381	1793	1435	2713
	Deaths ...	1983	1821	2212	2089	2235	2515	1983	1928

Deaths.

(*a*) The number of deaths registered in Town Districts during the year 1920 was :—

Males	578
Females	505
Total	1083

(*b*) Nationality of the deceased in the Town Districts :—

Swahili	553	Baluchi	12
Comoro	77	Goan	10
Ismaili Khoja	71	Somali	9
OtherA frican & Unknown	68	Other Indian	6
Shihiri	51	Persian	3
Arab	48	Seychellian	2
Mohammedan Indian	45	Abysenian	2
Hindu	45	Turk	1
Ithnasheri Khoja	32	Indian Christian	1
Bohora	30	European (It)	1
Memon	16	Total	1,083

TABLE XII.

Return of General Causes of Deaths—Zanzibar Town Districts, 1920.

Diseases	Qualified	Unqualified	Total
Infective Diseases.			
Dysentery	9	...	9
Gonorrhæa	...	1	1
Leprosy	7	...	7
Malaria	16	32	48
Black-Water	3	...	3
Measles	6	...	6
Pneumonia	25	5	30
Rheumatism Acute ...	3	...	3
Septicæmia	5	2	7
Small-Pox	1	...	1
Syphilis	...	1	1
Tetanus	2	...	2
Tuberculosis	41	84	125
General Diseases.			
Anæmia	5	50	55
Rickets	2	...	2
Debility	51	145	196
Rheumatism Chronic ...	...	7	7
Carried forward ...			

Table XII.

Return of General Causes of Deaths—Zanzibar Town District, 1920.—*Contd.*

Diseases	Qualified	Unqualified	Total
Brought forward ...			
Local Diseases.			
Diseases of the Nervous System.			
Sub-Section I.			
Meningitis	3	...	3
Encephalitis	1	...	1
Cerebral Hæmorrhage ...	5	...	5
Sub-Section II.			
Apoplexy	3	...	3
Epilepsy	2	2	4
Hemiplegia	6	...	6
Infantile Convulsions ...	12	29	41
Paralysis	4	24	28
Sub-Section III.			
Mental Diseases.	...	...	...
Melancholia	1	...	1
Insanity	3	15	18
Diseases of the Circulatory System.			
Pericarditis	2	...	2
Endocarditis	3	...	3
Valvular Aortic	1	...	1
Heart Failure	9	2	11
Diseases of the Respiratory System.			
Bronchitis	8	126	134
„ Acute	7	...	7
„ Capilary ...	3	...	3
Bronche-Pneumonia ...	21	63	84
Abscess of Lung	1	...	1
Pleurisy	1	...	1
Asthma	4	10	14
Diseases of the Digestive System.			
Gastritis	1	...	1
Ulceration of stomach ...	2	...	2
Hæmatemesis	1	...	1
Enteritis	3	...	3
Ulceration of intestines ...	1	...	1
Hernia...	1	3	4
Diarrhœa	15	74	89
Hepatitis Acute	1	...	1
Abscess Hepatic	3	1	4
Cirrhosis Hepatic	4	...	4
Carried forward ...			

TABLE XII.

Return of General Causes of Deaths—Zanzibar Town Districts, 1920.—*Contd.*

Diseases	Qualified	Unqualified	Total
LOCAL DISEASES.—*(continued)*			
Brought forward ...			
Peritonitis	1	...	1
Carcinoma of Tongue ...	1	...	1
Diarrhœa Infantile... ...	1	...	1
Intestinal Obstruction ...	2	...	2
,, Hæmorrhage ...	3	...	3
Abdominal Aneurysm ...	1	...	1
Diseases of the Urinary System.			
Nephritis, Acute	1	...	1
,, Chronic	3	5	8
Cystitis	3	...	3
Hæmaturia	1	...	1
Dropsy	9	1	10
Diseases of the Generative System.			
Male Organs.—			
Gangrenous Scrotum ...	4	...	4
Female Organs.—			
Abortion	...	1	1
Delayed Labour	1	...	1
Postpartum Hæmorrhage ...	...	2	2
Puerperal Septicæmia ...	1	1	2
Diseases of Organs of Locomotive.			
Arthritis	1	...	1
Diseases of Connective Tissues.			
Cellulitis	1	...	1
Elephantiasis	1	1	2
Injuries.			
General	6	...	6
Local	9	...	9
Tumours.			
Malignant	3	...	3
Nematoda.			
Filariasis	3	...	3
Ankylostomiasis	12	...	12
Total ...	376	707	1083

(*b*) Total number of deaths registered annually in the Island of Zanzibar since 1913.

Table XIII.

Districts	1920	1919	1918	1917	1916	1915	1914	1913
Town District ..	1083	1180	1359	1255	1168	1008	1317	1128
Mkokotoni District ..	800	859	1109	947	881	1005	801	889
Chwaka District ..	441	402	451	444	394	378	299	328
Mwera District ..	687	718	955	844	814	829	721	766
Total ..	3011	3159	3874	3490	3257	3220	3138	3111

Table XIV.

Monthly distribution of death registered in Zanzibar Island during 1920 compared with the average for the previous eight years.

(Deaths at Walezo are *not* included in this return.)

	Town	Mwera	Chwaka	Mkokotoni	Total
January ...	88	43	30	47	208
Average 8 years ...	79·5	60·4	29·4	68·3	237·5
February ...	76	62	24	61	223
Average 8 years ...	73·5	46·5	22·1	59·4	201·5
March ...	84	53	31	57	225
Average 8 years ...	85·2	53·4	24·1	60·2	223·0
April ...	99	52	34	82	267
Average 8 years ...	82·5	59·4	28·5	66·0	236·4
May ...	70	61	28	57	216
Average 8 years ...	98·9	65·0	32·2	81·1	277·2
June ...	71	52	34	71	228
Average 8 years ...	106·1	61·0	32·0	81·2	280·4
July ...	91	50	30	84	255
Average 8 years ...	99·3	71·2	34·8	87·6	292·9
August ...	74	60	43	69	246
Average 8 years ...	99.9	77·6	33·4	89·1	300·0
September ...	84	49	39	55	227
Average 8 years ...	90·9	82·9	31·3	72·5	277·6
October ...	73	62	37	82	254
Average 8 years ...	107·5	91·4	37·3	99·4	335·5
November ...	100	68	35	57	260
Average 8 years ...	111·0	94·0	59·0	98·4	362·4
December ...	105	75	76	78	334
Average 8 years ...	98·9	77·0	61·1	87·9	324·9
Total ...	1015	687	441	800	2943
Average 8 years ...	1133·1	839·8	425·3	951·1	3349·3

TABLE XV.

Monthly Rainfall—Zanzibar Town, 1910 to 1920.

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	Average 10 years	1920
January ...	4·71	0·54	4·36	0·39	2·84	1·74	1·63	2·20	2·33	2·02	2·27	0·00
February ...	2·36	0·01	6·99	1·37	0·05	0·76	3·50	4·29	1·36	1·07	2·17	0·08
March ...	0·30	9·92	7·39	9·99	8·56	6·03	2·29	4·46	4·37	7·27	6·12	1·19
April ...	14·52	13·40	13·09	17·59	12·69	9·62	33·35	16·49	11·55	8·85	15·81	8·47
May ...	11·77	17·51	3·45	11·18	3·84	10·30	4·35	10·63	9·66	2·81	8·55	15·09
June ...	0·02	2·24	0·47	0·07	0·88	5·00	1·38	4·20	6·27	0·20	2 07	0·77
July ...	3·30	1·53	0·03	0·31	0·22	3·94	0·38	1·23	4·86	3·00	1·88	0·13
August ...	1·82	1·76	1·04	0·88	3·65	0·45	2·11	2·05	0·60	1·63	1·60	1·41
September ...	0·67	1·22	6·59	2·58	1·04	1·17	2·81	2·01	0·76	1 46	2·03	1·63
October ...	1·81	2·89	0·98	4·22	0·89	2·63	5·83	2·27	5·77	3·21	3·05	5·88
November ...	7·47	6·26	5·70	3·20	4·32	9·38	2·94	6·79	2·18	11·81	6·00	1·76
December ...	8·08	1·86	17·82	1·31	4·37	0·61	2·92	0·44	6·79	4·65	4·84	7·62
Total ...	56·83	59·14	67·91	53·09	43·35	51·63	63·49	57·06	56·50	47·98	55·69	44·03

TABLE XVI.

Meteorological Observations—Zanzibar Town and Banani, Pemba, 1920.

	Zanzibar Town						Banani Pemba				
	Rainfall	Relative Humidity	Mean Maximum Temperature	Mean Minimum Temperature	Absolute Maximum Temperature	Absolute Minimum Temperature	Rainfall	Mean Maximum Temperature	Mean Minimum Temperature	Absolute Maximum Temperature	Absolute Minimum Temperature
January ..	0·00	72	87·6	80·1	90·0	77·6	0·41	88·6	79·3	90·0	78·0
February ..	0·08	73	67·0	61·2	90·0	80·1	0·02	89·1	79·5	90·5	78·5
March ..	1·19	71	88·6	80·5	93·0	76·0	2·77	88·9	79·4	92·0	75·0
April ..	8·47	77	85·9	77·4	88·9	74·0	23·41	86·4	78·2	90·0	74·0
May ..	15·09	82	83·7	75·4	86·1	71·2	19·58	86·8	79·9	88·0	73·0
June ..	0·77	77	81·8	74·1	84 4	72·0	3·04	83·1	74·7	87·0	72·0
July ..	0·13	77	81·4	73·0	83·1	71·9	3·10	81·9	73·8	83·5	72·0
August ..	1·41	75	81·9	72·7	84 0	69·8	0·31	83·2	73·5	85·0	71·0
September ..	1·63	74	83·3	73·1	85·4	71·1	0·04	84·4	73·7	87·0	71·0
October ..	5·88	76	83·8	75·0	87·2	73·1	5·06	85·3	76·2	88·0	74·0
November ..	1·76	73	86·9	78·5	91·5	76,4	3·83	83·8	78·1	90·0	76·0
December ..	7·62	75	86·4	79·0	92·1	74·8	7·52	87·8	78·5	92·0	76·0

PART VII.—GENERAL.

Control of Opium.

The controlled issue of opium to registered habitues in Zanzibar shows a decrease in their number from 188 in 1919 to 184, and a decrease in the average monthly consumption of opium from 6 lbs. to 5 lbs. 1 oz.

The following table shows the races and sexes of those in the register at the close of 1920 as compared to 1919 :—

Table XVII.

Races	1920			1919
	Male	Female	Total	Total
INDIAN:—				
Ismaili Khoja ...	10	26	36	37
Suni (Memon) ...	30	11	41	42
Ithnasheri Khoja ...	7	6	13	13
Banyan ...	6	...	6	8
Pathan ...	2	...	2	2
Baluchi ...	3	...	3	3
Rajput ...	3	...	3	3
Bohora ...	1	...	1	1
Hurdu ...	...	...	...	1
OTHERS:—				
Swahili ...	49	4	53	52
Arab ...	19	...	19	20
Persian ...	2	...	2	2
Shihiri ...	2	...	2	2
Gazija ...	3	...	3	3
Total ...	137	47	184	188

Walezo Sick Poorhouse.

The following table shows the number of sick paupers treated at the Walezo Poorhouse during the year 1920 :—

Particulars	Males	Females	Total
Remaining on 1st January, 1919 ..	25	22	47
Admitted during the year, 1920 ..	109	52	161
Died do. do. ..	43	18	62
Discharged do. do. ..	51	18	69
Escaped do. do. ..	6	9	15
Remaining at the end of the year ..	34	29	63

Financial.

The sanctioned Public Health Division Budget for the year 1920 was Rs. 229,355, of which Rs. 184,925-21 were spent, leaving a balance of Rs. 44,429-79.

Expenditure.

Particulars of votes.	Estimate.		Actual Expenditure.				
	Rs.	£.	Rs.	cts.	£.	s.	d.
PERSONAL EMULUMENTS							
Under this heading are included the salaries and duty allowances of the Medical Officer of Health, Economic Biologist, Veterinary Officer, Sub-Assistant Surgeons, Laboratory Assistants, Sanitary Inspectors, Inoculators, Vaccinators, Rat Trappers and Dissectors, Mosquito Inspectors, Disinfecting Engineer, Clerks, Caretakers, Scavengers, etc.	162,915	10,861	139,769	53	9,317	19	4
OTHER CHARGES.							
Under this heading are included passages and travelling allowances, Suppression of Infectious Diseases, Quarantine Station, Upkeep of Laboratory, Museum, Cattle Quarantine Station, Slaughter House, Markets, Dhobi Station, Mwembe-Ladu Graveyard, Leper Asylums, Poor House, Motor Boat, Motor Car, MotorCycle, Purchase of Disinfectants, Drugs and Dressings, Vaccines, Serums, Sanitary Appliances, Furniture, Uniforms, etc.	66,440	4,429	45,155	68	3,010	7	7

B. SPEARMAN,
Medical Officer of Health.

Zanzibar, 13th December, 1921.

REPORT ON THE PUBLIC HEALTH DIVISION. PEMBA.

FOR THE YEAR 1920.

General.—It is impossible to record any material progress in connection with the Public Health Department in Pemba for the year 1920. No new works were completed and no considerable sanitary or hygienic improvements were made.

According to the last Census of ten years ago Pemba had a population of over 88,109 inhabitants, i.e., the island contains two-fifths of the inhabitants of the Protectorate as against three-fifths living in Zanzibar.

Pemba has never benefited by anything like its share of the money which is annually devoted to the maintenance of hygienic and public health in the Protectorate. Practically no improvements have been effected during the last seven years. The urgent sanitary needs mentioned in Dr. Watkins' report of 1914 and reported in Dr. Curwen's report of 1917 are still the urgent sanitary needs of 1921.

Throughout the year the island has been without any sort of hospital for the treatment of infectious disease. Such a building was promised as the first work of 1920. It was begun by the Public Works Department about the middle of the year, and was still unfinished by the end.

Important matters like the incineration of rubbish, the protection of the water supply, the establishment of surface drainage and the reduction of the number of anopheline breeding grounds, though enumerated year after year in the Sanitary Report, have neither been estimated for nor taken in hand.

Lastly the supervision of the health of the whole island is added to the duties of the single Medical Officer in Pemba, who is supposed to devote one-fifteenth of his time to this work, a work which would be sufficient to employ the whole time and energies of an Assistant Medical Officer of Health.

Epidemic Diseases.—In the absence of any isolation hospital it was fortunate that no case of plague, or small-pox, or cerebro-spinal meningitis occurred during the year.

Influenza became epidemic in November and December. The first cases were introduced from Zanzibar by Government employees returning from local leave, but owing to the lack of any special accommodation it was impossible to isolate the early cases or to attempt to prevent its spread. Fortunately the cases were for the most part mild, but there were a few patients who suffered from severe lung complications, and two deaths from the disease were notified in Chake Chake. Ninety-two cases are recorded as having attended as out-patients, but the actual number of cases must have been many times greater.

There was a considerable epidemic of whooping cough in the Chake Chake district, which resulted in several deaths.

A small epidemic of varicella occurred in the Ole district, chiefly in the village of Vikongoni.

As is usual out here, the disease took on a severe form, but there were no fatalities.

Measles was prevalent in the autumn, especially in the Weti district.

Bacillary Dysentery.—A small outbreak of this disease occurred in February. It did not spread widely, but three locally contracted cases occurred in bed-ridden patients in the hospital. There was no fatality.

Sporadic and generally chronic cases of amœbic dysentery are encountered from time to time in the routine examination of stools, six such cases being recorded during the year.

As has been mentioned in previous health reports, there seems to be a most noticeable absence of diarrhœal diseases throughout the island, and only 46 cases of diarrhœa are recorded amongst 12,118 new out-patients.

General Sanitary Measures.—The difficulties in connection with vaccination owing to the absence of an ice machine and the consequent impossibility of maintaining an active supply of lymph, at any rate during the hotter weather, were mentioned in last year's report.

In view of the threatened introduction of small-pox an arm-to-arm vaccination campaign was begun at the end of 1919, glycerinated human lymph being employed. There were 1,670 vaccinations carried out in the Chake district at the end of 1919 and 1,279 early in 1920.

It was hoped that it would be possible to carry out systematic vaccination in the other districts of the island during the cooler weather in June and July, when ordinary calf lymph, if brought on ice from Zanzibar and stored in banana stalks, would presumably keep active for two or three weeks, but it was not found possible to spare the travelling vaccination from Zanzibar. It is much to be hoped that this campaign will be organised and carried out during the cool months of1921.

Thirty-eight bags of grain intended for human food, which had been damaged by sea water during transit from Zanzibar by dhow, were examined at Chake Chake Customs, 22 of these were passed for food after the contents had been carefully dried, while 16 were condemned.

There were 141 pariah dogs poisoned, and the nuisance caused by these animals was considerably reduced.

Leper Settlements.—The construction of the proposed Central Leper Settlement on Funzi Island has been postponed, and the three village settlements have been maintained on the usual lines.

The present numbers are as follows :—

Pujini	...	...	61
Nduni	...	...	39
Kengeja		...	27
		Total	127

During the year 23 patients died and one escaped and has not been traced to date, while 20 new patients were admitted, so that there is a net reduction of four in the total numbers.

In addition there are 17 patients under observation. These exhibit clinical symptoms of nerve leprosy, but bacilli cannot be found, and they are consequently non-infectious and no danger to their neighbours; they are also sufficiently vigorous to maintain themselves. They are allowed to live at home on condition that they report once a year to the Medical Officer.

Amongst the suspected lepers who were brought for examination 13 were pronounced free from any sign of leprosy and were given a certificate to this effect and sent home.

The work of the Medical Officer in examining suspected lepers has been lightened by the fact that the Mosquito Inspector Barnabas received instruction in acid-fast straining in the laboratory at Zanzibar, and is now able to carry out the routine quite satisfactorily. Of course, the microscopical examination and diagnosis of the films rests with the Medical Officer.

Opium Control.—Steady reduction in the numbers of licensed opium takers, and in the amount of the drug consumed by individuals, can again be recorded.

The largest amount now issued to any individual is 90 grains or half tola per month. This compares very favourably with the average monthly consumption per head in Zanzibar in 1917, which is stated in the report as 270 grains or $1\frac{1}{2}$ tolas.

The improvement in the health of some of the licencees coincident with this steady reduction of the amount of the drug employed has been most marked, and is gratifying to the Opium Controller, who has the difficult task of trying to educate their wills to overcome the cravings of their lower nature.

R. HOWARD,
Acting Medical Officer of Health, Pemba.

Pemba, 23rd November, 1921.

REPORT OF THE VETERINARY SECTION

FOR THE YEAR 1920.

DISEASES OF CATTLE.

East Coast Fever.—Eighty cases of this disease were detected during the year, nine of which occurred in the town cowsheds. The disease has sensibly decreased in the town area since the introduction of systematic dipping. In previous years the town pastures were heavily infected. It is surmised that large numbers of infected ticks have been destroyed.

East Coast Fever broke out in the Quarantine Park among a herd of cattle imported from Tanganyika Territory. They were immediately slaughtered whilst in quarantine.

The dipping tank at quarantine station was used throughout the year, 20,763 cattle being dipped.

Chemical analysis were made monthly, no oxidation of arsenic to arsenate was noted. Samples were sent as controls to the analytical chemists at the Veterinary Research Laboratory in Pretoria, and the Chemical Department, Nairobi.

Trypanosomiasis.—A survey of the island was made with the result that cases of Trypanosomiasis (T. pecorum) were found in every district visited.

The infection rate was high in low-lying and well-watered areas, on the other hand rocky dry country showed a remarkably low infection rate. In the former Tabanidæ abounded, in the latter Lyperosia minuta was the dominant blood-sucking fly.

Sixty-four town milch cows were examined. None showed trypanosomes. It is noteworthy that Stomoxydæ are common in the town, and it seems as if this fly was not a capable vector. No Tabanidæ were captured in the town area.

Three hundred and thirty-four imported cattle from Kismayu were examined, the blood of five of these was infected with trypanosomes (T. pecorum). Cattle imported from Tanganyika Territory showed a high rate of infection, out of 105 animals trypanosomes were found in the blood of 31.

The majority were of the pecorum type, but two showed a form closely resembling T. brucei. All animals proved to harbour trypanosomes are immediately slaughtered in the Quarantine Park.

DISEASES OF EQUINES.

Horse Sickness.—Only one case was seen in a horse imported from Dar-es-Salaam. The *post-mortem* lesions were found in the lungs characteristic of this disease.

Horse sickness is a rare disease in the Protectorate, nearly every year a few cases are notified, but the disease has never broken out in epidemic form. The majority of owners do not keep their animals in mosquito-proofed stables. It is of some interest to note that the ubiquitous Culex fatigans feeds with avidity on the blood of horses, it seems therefore that this species of mosquito is incapable of transmitting the disease.

Glanders.—No case detected. All animals imported and not accompanied by Mallein certificates were subjected to the Mallein test in the quarantine station.

Trypanosomiasis.—Two horses examined, both negative. Out of 47 local donkeys three showed trypanosomes of the pecorum type.

Epizootic Lymphangitis.—No case detected.

DISEASES OF GOATS AND SHEEP.

Hæmonchiasis.—A number of local goats, imported Somali goats, and sheep have been examined for these parasites. All harboured numbers of adult Hæmonchus contortus. It appears that our local goats have attained some immunity to the ravages of this worm.

The majority of animals found with worms in the Central Abattoir showed no symptoms of emaciation or anæmia.

A flock of sheep brought from Somaliland for experimental purposes were turned out to graze on the local pastures. Periodical examination of fæces revealed eggs of H. contortus, but none have died. Lambs dropped by these experimental animals sickened after two or three months' grazing, showing progressive emaciation and intense anæmia and towards the end of the disease offensive blood-stained diarrhœa. The autopsy revealed intense blanching of all organs, this was especially noticeable in the kidneys, the abomasum showed pinhead hæmorrhages under the submucosa, and contained an enormous number of adult worms. These sheep are now being regularly dipped at intervals of five days to see whether an arsenical bath lessens the incidence of the disease.

Distomiasis.—No cases recorded. Both local and imported goats and sheep seem to be free of liver rot.

Pleuro-Pneumonia Contagiosa.—As in former years, a number of goats from Kismayu arrived infected. This disease is of very rare occurrence amongst indigenous goats, and the following experiment was undertaken. One healthy young native goat was bought on 9/7/20, and the nasal discharge of a Kismayu goat in the last stage of the disease was inserted into its nostrils and well rubbed into the mucous membrane.

The animals died in 22 days, *post-mortem* examination showed the characteristic lesions of Pleuro-Pneumonia.

Trypanosomiasis.—Out of 85 sheep imported from Tanganyika Territory four showed trypanosomes of the pecorum type.

Table I.

Death Report for 1920.

	Deaths 1918.	Deaths 1919.	Deaths 1920.
Milch Cows, ex dairies ...	39	41	32
Calves ex dairies ...	39	22	16
Cart Bullocks ...	30	26	10
Oxen ...	59	31	39
Horses ...	5	7	2
Donkeys ...	47	17	9
Mules ...	3	3	2
Goats ...	661	438	247
Sheep ...	34	48	9
Buffaloes ..	2	2	4
Camels ...	...	6	5
Total ...	919	641	375

As in former years, the loss from Pleuro-Pneumonia in goats, the majority of whom are imported from Kismayu, was very heavy. Compared with the previous two years the deaths in stock are considerably less.

Table II.

Numbers of animals imported and quarantined at Pigaduri Quarantine Park, 1920.

	1918	1919	1920
Oxen	1845	1186	1637
Cows	47	165	92
Calves	36	123	43
Goats	5820	7413	8910
Sheep	585	631	1258
Camels	13	13	41
Donkeys	14	15	18
Horses	7	20	9
Mules	3	8	10
Dogs	1	5	5
Cats	...	...	2
Total ...	8371	9579	12025

All animals, except a few horses having satisfactory veterinary certificates, are detained at the discretion of the Veterinary Officer in the Quarantine Park.

As a preventive measure, all imported cattle are dipped against East Coast Fever.

There was an outbreak of East Coast Fever in the Park among the cattle imported from Dar-es-Salaam, they were immediately dipped and then killed while in quarantine.

Table III.

Number of animals exported. chiefly to Pemba, during the year 1920.

	1918	1919	1920
Oxen	23	140	50
Cows	1	...	...
Calves	1	1	3
Goats	4	138	161
Kids	...	...	20
Donkeys	7	12	4
Mules	...	...	...
Camels	...	...	6
Buffaloes	...	...	1
Sheep	...	...	14
Dogs	...	...	1
Total ...	36	291	260

Table IV.

Number of animals examined and slaughtered.

	Slaughtered in Government Abattoirs			Carcases Condemned.					
				Wholly			Partially		
	1918	1919	1920	1918	1919	1920	1918	1919	1920
Oxen ..	1782	1069	13 5	8	32	36	786	952	1141
Cows ..	35	57	41	..	..	..	22	51	40
Calves ..	..	6	16	..	..	..	..	1	4
Goats ..	7249	10789	14949	5	6	10	2199	3657	3286
Sheep ..	584	745	1106	..	..	2	97	376	538
Camels ..	9	4	20	..	..	..	..	2	18
Buffaloes ..	..	12	1	..	..	..	..	12	..
Total ..	9659	12682	17528	13	38	48	3104	5051	5027

All meat was examined before being passed to the public. Thirty-six oxen were condemned totally on account of measles, 10 goats and two sheep for pleuro-pneumonia. A large number of animals brought to the Abattoir were rejected as unfit for slaughter and returned to their owners.

Animals which die in the town are subjected to *post-mortem* examination. Much valuable information has been collected and certain evidence of practical value to the Medical Officer of Health obtained, for instance the prevalence of tuberculosis in milch cows.

Table V.

Number of *post-mortems* performed, 78.

	No. of Pm's Performed.	Deaths from E. C. F.	Tuber-culosis.	Contagious Pleuro Pneumonia.	Horse-Sickness.
Oxen ...	21	11	...	1	...
Cows ...	31	10	1	...	...
Calves ...	8	2	...	...	...
Goats ...	8	...	...	8	...
Sheep ...	1	...	...	...	...
Camels ...	1	...	...	...	...
Horses ...	2	...	...	...	1
Donkeys ...	3	...	...	...	...
Dogs ...	1	...	...	...	...
Total ...	76	23	1	9	1

NOTE.—The remainder were either from such common complaints as pneumonia, pericarditis, congestion of lungs, gastritis, colic, malnutrition, &c., or were not diagnosed.

VETERINARY HOSPITAL.

Total number of animals treated, 77; oxen, 18; donkeys, 56; and mules, three.

NOTE.—All the above patients were treated for trivial complaints such as abscesses, wounds, gall sores and lameness.

SHAH MOHAMMED KHAN,
Veterinary Officer.

Zanzibar, 23rd November, 1920.

REPORT OF THE BIOLOGICAL SECTION
FOR THE YEAR 1920.

The greater part of the work accomplished by this section was the routine examination of material supplied by the medical and veterinary officers. As in previous years, a large number of blood films, &c., were submitted by the Veterinary Officer.

It is hoped that next year the Veterinary Officer will be able to administer his own section, and that the Biologist will only undertake work which has a direct bearing on biological problems. During the absence of the Medical Officer of Health on leave all zoological material, usually examined by that officer, was passed to my section for diagnosis. A large number of blood films and fæces were examined. Owing to this and the administration of the Veterinary Section no time was left for research work. Two papers were published during the year from this section.

1. Insects injurious to economic crops in the Zanzibar Protectorate. Bulletin of Entomological Research, Vol. 10, Part 3, 1920.
2. Notes on the identification of Anophelinæ and their larvæ in the Zanzibar Protectorate. Bulletin of Entomological Research, Vol. 10, 1920.

The Museum has been enriched by a number of new specimens. Collections were sent to the Wellcome Bureau of Scientific Research. Much material has been collected on local trypanosomiasis, which will be worked up and published as a special report during the forthcoming year.

EXAMINATIONS UNDERTAKEN IN THE BIOLOGICAL LABORATORY.

Number of specimens examined, 2,083.

Trypanosomiasis.

	No examined.	Positive.
Local Cattle	222	2
,, Donkeys	47	3
,, Dogs	9	0
,, Mules	4	0
,, Horses	2	0
,, Camels	3	0
,, Buffaloes	31	0
,, Town Cows	34	0
Imported Kismayu Cattle	34	5
,, ,, Goats	6	0
,, Somali Donkeys	9	0
,, ,, Cows	27	0
,, ,, Camels	54	1
,, Horses	3	0
,, Indian Cattle	6	0
,, Sheep (Tanganyika Territory)	85	4
,, Cattle ,, ,,	105	31
,, Goats ,, ,,	100	9
,, Mules ,, ,,	6	0
,, Donkeys ,, ,,	2	0

East Coast Fever.

	Positive.
Local Town Cows and Calves	9
ImportedCattle (Tanganyika Territory)	70
ImportedCattle (Kismayu)	1

NOTE.—The actual number examined is not stated. In the majority of cases the material submitted was from animals obviously suffering or that had died from East Coast Fever.

In the report of the Biological Section for 1917 four young water buffaloes were diagnosed as having succumbed to East Coast Fever. It was then stated that the Koch's Blue Bodies found in the spleen were not typical. On re-studying the material there is no doubt that the bodies were diagnostic and that the animals died of East Coast Fever. This proves definitely that Indian water buffaloes are susceptible to Theileriasis.

W. M. ADERS,
Economic Biologist.

Zanzibar, 13th December, 1921.